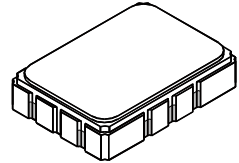


- **Designed for SDARS IF**
- **SAW Diplexer 72.54 MHz / 80.46 MHz**
- **5.0 X 7.0 mm Surface-mount Case**
- **Complies with Directive 2002/95/EC (RoHS)**



SF2143B

72.54 / 80.46 MHz SAW Diplexer



SMP-03

Absolute Maximum Ratings

| Rating | Value | Units |
|---|-------------|-------|
| Maximum Incident Power in Passband | +10 | dBm |
| Maximum DC Voltage Between any Two Terminals | 0 | VDC |
| Operating Temperature Range | -40 to +105 | °C |
| Storage Temperature Range in Tape and Reel | -40 to +85 | °C |
| Peak Solder Reflow Temperature, 10 seconds/5 cycles | 260 | °C |

Electrical Characteristics TDM1 Filter

| Characteristic | Sym | Notes | Min | Typ | Max | Units |
|---|--------------------|-------|----------------------|-------|-----|-------------------|
| Nominal Center Frequency | f_C | 1 | | 72.54 | | MHz |
| Passband Width: | BW_1 | | 3.7 | 4.1 | | MHz |
| | BW_{15} | | | 6.4 | 6.7 | MHz |
| | BW_{30} | | | 7.3 | 7.5 | MHz |
| Passband Minimum Insertion Loss (including matching network) at f_C | IL_{MIN} | | | 16 | 18 | dB |
| Amplitude Ripple, $f_C \pm 1.85$ MHz | | | | 0.6 | 1.3 | dB _{P-P} |
| Attenuation Relative to Minimum Insertion Loss: | | | 40 | 42 | | dB |
| | 50.00 to 66.48 MHz | | | 42 | | dB |
| | 66.48 to 68.08 MHz | | 37 | 42 | | dB |
| | 77.30 to 78.60 MHz | | 30 | 33 | | dB |
| | 78.60 to 86.50 MHz | | 30 | 33 | | dB |
| | 86.50 to 91.50 MHz | | 39 | 43 | | dB |
| | 91.50 to 100.0 MHz | | 42 | 46 | | dB |
| Group Delay Ripple | | | | 30 | 150 | nSP-P |
| Source Impedance, Differential | | | 27 ohms or 200 ohms | | | |
| Load Impedance, Differential | | | 1K ohms or 1.5K ohms | | | |

Electrical Characteristics TDM2 Filter

| Characteristic | Sym | Notes | Min | Typ | Max | Units |
|---|--------------------|-------|----------------------|-------|-----|-------------------|
| Nominal Center Frequency | f_C | 1 | | 80.46 | | MHz |
| Passband Width: | BW_1 | | 3.7 | 4.2 | | MHz |
| | BW_{15} | | | 6.4 | 6.7 | MHz |
| | BW_{30} | | | 7.2 | 7.5 | MHz |
| Passband Minimum Insertion Loss (including the matching network) at f_C | IL_{MIN} | | | 15 | 18 | dB |
| Amplitude Ripple, $f_C \pm 1.85$ MHz | | | | 0.7 | 1.3 | dB _{P-P} |
| Attenuation Relative to Minimum Insertion Loss: | | | 39 | 42 | | dB |
| | 50.00 to 74.39 MHz | | | 42 | | dB |
| | 74.39 to 75.99 MHz | | 33 | 38 | | dB |
| | 85.21 to 86.50 MHz | | 30 | 38 | | dB |
| | 86.50 to 91.50 MHz | | 35 | 40 | | dB |
| | 91.50 to 100.0 MHz | | 43 | 46 | | dB |
| Group Delay Ripple | | | | 40 | 150 | nSP-P |
| Source Impedance, Differential | | | 27 ohms or 200 ohms | | | |
| Load Impedance, Differential | | | 1K ohms or 1.5K ohms | | | |

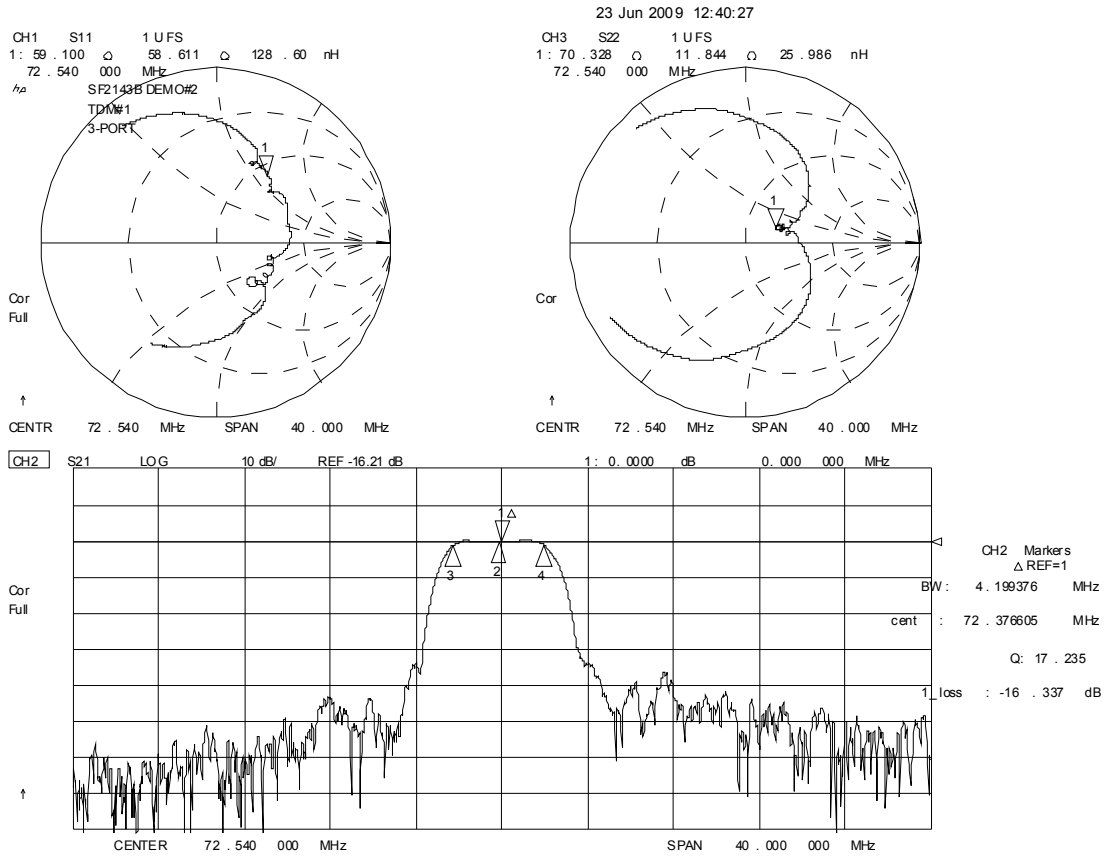
| | | | |
|--|--|---|-----------------------------------|
| Case Style | | 6 | SMP-03 7 x 5 mm Nominal Footprint |
| Lid Symbolization (YY=year, WW=week, S=shift) See note 4 | | | RFM SF2143B YYWW |

CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

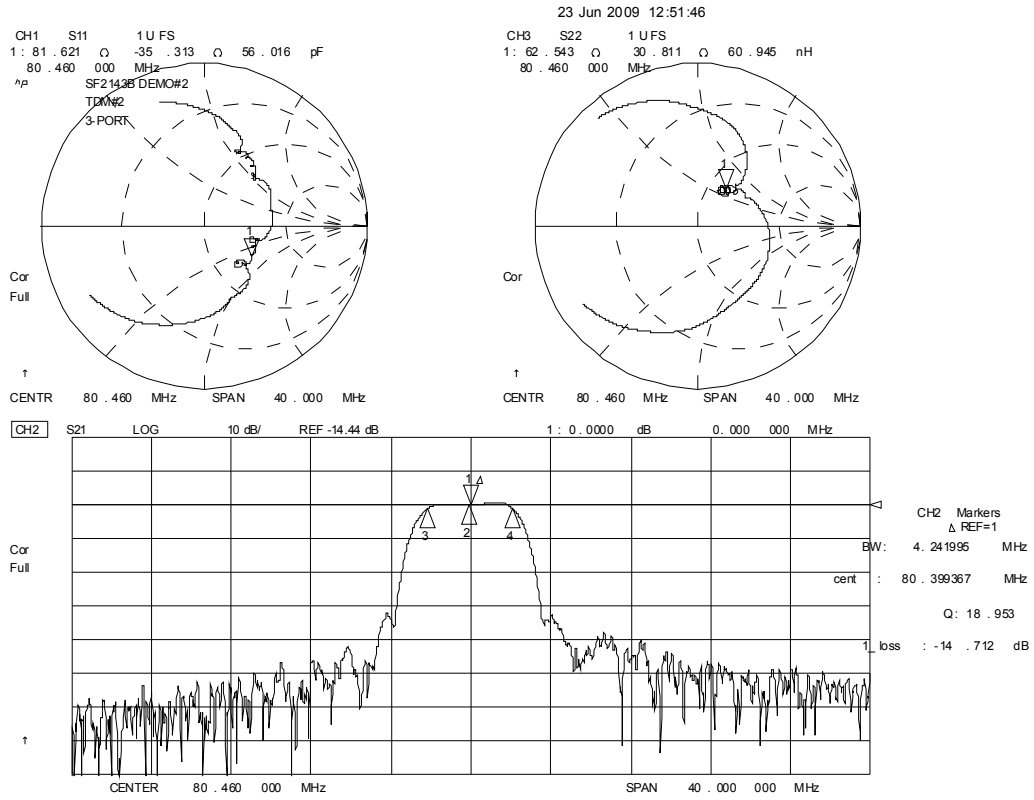
NOTES:

1. Unless noted otherwise, all specifications apply over the operating temperature range with filter soldered to the specified demonstration board with impedance matching to 50 Ω and measured with 50 Ω network analyzer.
2. Unless noted otherwise, all frequency specifications are referenced to the nominal center frequency, f_C .
3. Rejection is measured as attenuation below the minimum IL point in the passband. Rejection in final user application is dependent on PCB layout and external impedance matching design. See Application Note No. 42 for details.
4. "LRIP" or "L" after the part number indicates "low rate initial production" and "ENG" or "E" indicates "engineering prototypes."
5. The design, manufacturing process, and specifications of this filter are subject to change.
6. Tape and Reel Standard ANSI / EIA 481.
7. Either Port 1 or Port 2 may be used for either input or output in the design. However, impedances and impedance matching may vary between Port 1 and Port 2, so that the filter must always be installed in one direction per the circuit design.
8. US and international patents may apply.
9. Murata, stylized Murata logo, and Murata N.A., Inc. are registered trademarks of Murata Manufacturing Co., Ltd.

TDM1 Amplitude and Impedance Plots

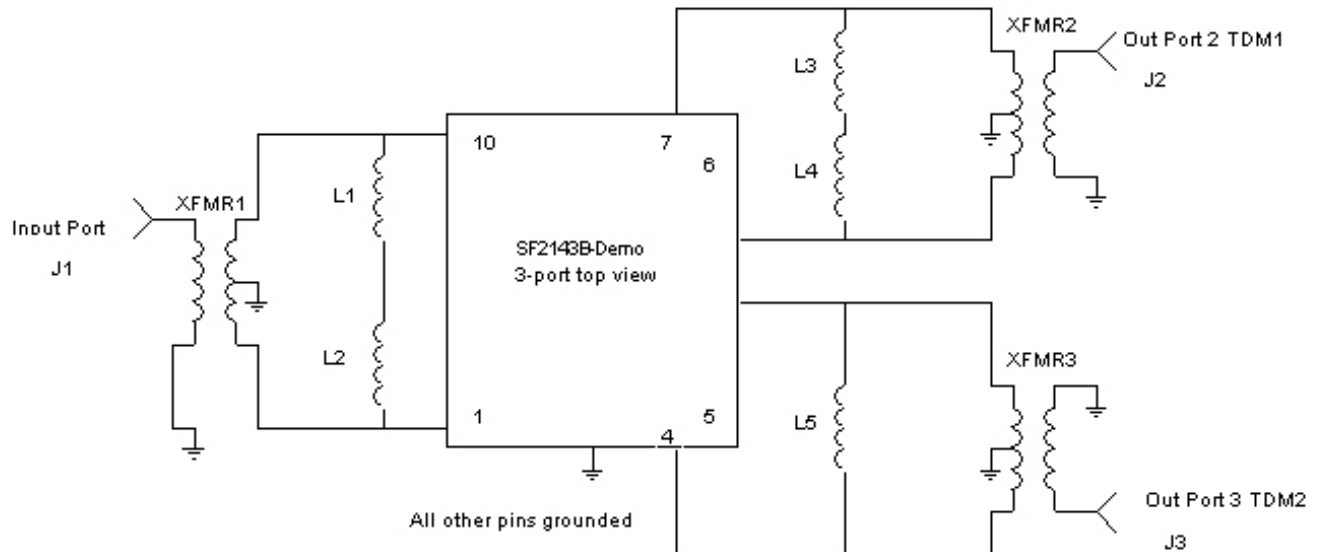


TDM2 Amplitude and Impedance Plots



Test Circuit

SF2143B Demo Board



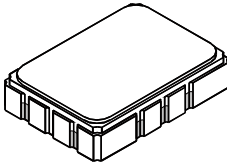
| | |
|--------------|--|
| J1-J3 | 500-0248-002 4 hole flange SMA connector |
| PCB | 400-1768-001 Gold 7 × 5 mm pkg PCB |
| XFMR2, XFMR3 | 501-0912-004 16:1 Transformer |
| XFMR1 | 501-0912-001 4:1 Transformer |

| | |
|----|------------------------------|
| L1 | 501-0782-101 100nH 0805 Ind |
| L2 | 501-0782-270 27nH 0805 Ind |
| L3 | 501-0782-390 390nH 0805 Ind |
| L4 | 501-0782-120 12nH 0805 Ind |
| L5 | 501-0782-331 330 nH 0805 Ind |

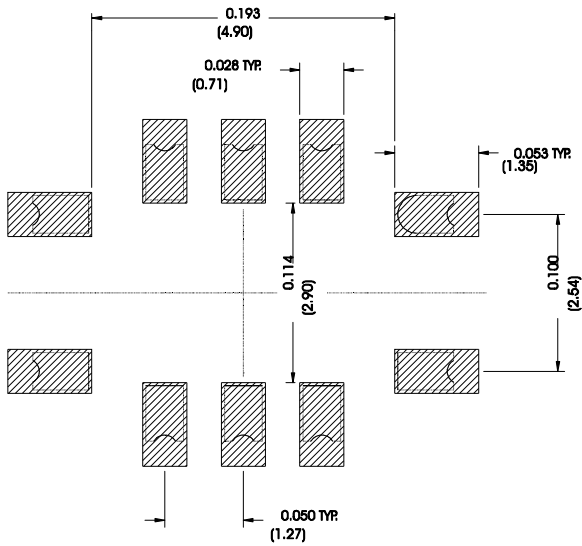
SMP-03 Case

10-Terminal Ceramic Surface-Mount Case

7 x 5 mm Nominal Footprint



Recommended PCB Footprint



Case Dimensions

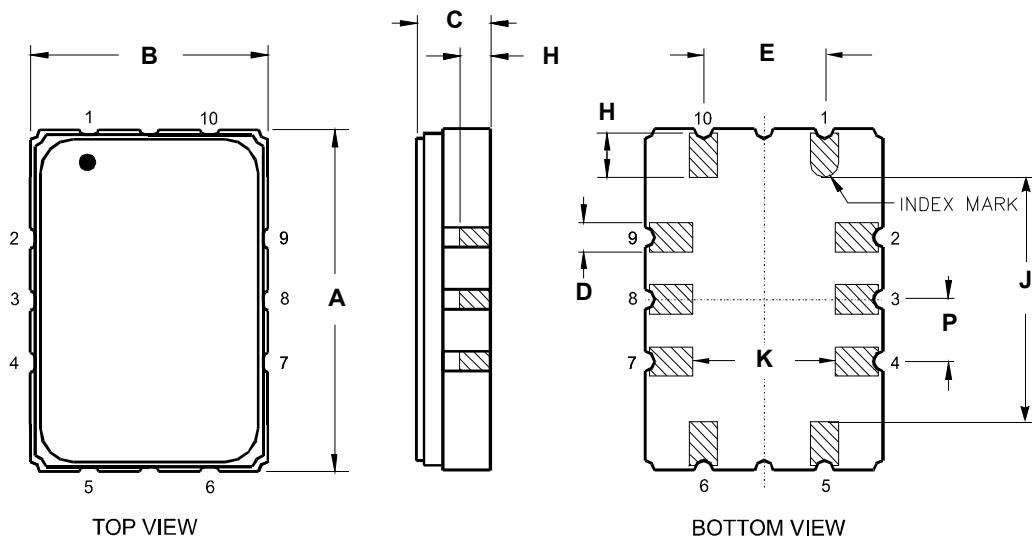
| Dimension | mm | | | Inches | | |
|-----------|------|------|------|--------|-------|-------|
| | Min | Nom | Max | Min | Nom | Max |
| A | 6.80 | 7.00 | 7.20 | 0.268 | 0.276 | 0.283 |
| B | 4.80 | 5.00 | 5.20 | 0.189 | 0.197 | 0.205 |
| C | - | 1.65 | 2.00 | - | 0.065 | 0.079 |
| D | 0.47 | 0.60 | 0.73 | 0.019 | 0.024 | 0.029 |
| E | 2.41 | 2.54 | 2.67 | 0.095 | 0.100 | 0.105 |
| H | 0.87 | 1.00 | 1.13 | 0.034 | 0.039 | 0.044 |
| J | 4.87 | 5.00 | 5.13 | 0.192 | 0.197 | 0.202 |
| K | 2.87 | 3.00 | 3.13 | 0.113 | 0.118 | 0.123 |
| P | 1.14 | 1.27 | 1.40 | 0.045 | 0.050 | 0.055 |

Electrical Connections

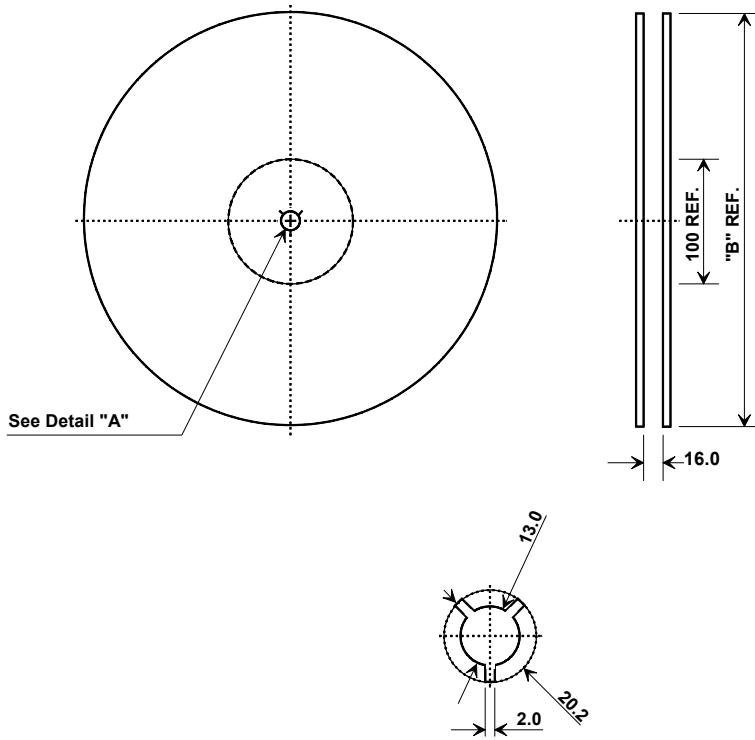
| Connection | | Terminals |
|------------|-------------|------------|
| Port 1 | Input | 1 |
| | Input | 10 |
| Port 2 | Output TDM1 | 6 |
| | Output TDM1 | 7 |
| Port 3 | Output TDM2 | 4 |
| | Output TDM2 | 5 |
| Ground | | All others |

Materials

| | |
|--------------------|--|
| Solder Pad Plating | 0.3 to 1.0 μm Gold over 1.27 to 8.89 μm Nickel |
| Lid Plating | 2.0 to 3.0 μm Nickel |
| Body | Al_2O_3 Ceramic |
| Pb Free | |



Tape and Reel Specifications



| "B" | | Quantity Per Reel |
|--------|-------------|-------------------|
| Inches | millimeters | |
| 7 | 178 | 500 |
| 13 | 330 | 2000 |

COMPONENT ORIENTATION and DIMENSIONS

| Carrier Tape Dimensions | |
|-------------------------|---------|
| Ao | 5.5 mm |
| Bo | 7.5 mm |
| Ko | 2.0 mm |
| Pitch | 8.0 mm |
| W | 16.0 mm |

